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Subjective Study of Risk Assessment in Miners Work

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Abstract

Profession of miners associated with a certain degree of risk. But in industrial psychology often considered only the risk of injury (extra risk), while there is the need to allocate the risk of a different nature. This is a health risk, which is the result of bad working conditions (the risk of delayed results).

We investigated the motivation of choice of professions related health risk. The study involved two representatives of professions related to risk – 52 miners and 47 fire-rescue workers.

The main result - subjective assessments of miner profession are one of the most dangerous. Firefighters work from a subjective point of view is not considered as dangerous. Miners realized double risk of their profession - extra risk and risk of delayed results. Miners consider the professional risk unreasonable, but against the social risk - the risk of unemployment, the presence of work, related risk, is understood as the value.

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Keywords: extra risk, risk of delayed results, risk assessment, miners, fire-rescue workers.

1. Introduction

It is known that the profession of miners associated with a certain degree risk. However, in industrial psychology only the risk of injury is often considered, while there is need to allocate risk of different nature. This is health risk, which is the result of bad working conditions. Previously, the risk profession miner to balance reduced retirement age, high income and job schedule to the same profession miner considered honorable. To date, all of the benefits of this trade were abolished, the working conditions deteriorate, but, nevertheless, there is no outflow of workers. We must assume that changes in working conditions will certainly lead to changes in work motivation. We are interested in motives of professional activity, under different conditions, given the presence of two types of risk in this profession.

In psychological terms, distinguish between the objective and subjective aspects of risk in activity of the individual, particularly in the professional activity of the subject. The objective side of risk is considered in industrial psychology from point of view of working conditions and the likelihood of injury. 1. M.A. Kotik studying the labor process not just as a single human impact on components of labor, as well as their complex interaction, comes to the conclusion that, in the course of work a person can be suffered from various external

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influences of various kinds, related to specific conditions, such as mechanical, chemical, thermal, electrical, and other / 3 /. The human body can safely tolerate exposure of a different nature as long as risk of harm and do not exceed certain levels and duration. By the nature of the consequences of the author identifies safety hazards that lead to injury and harmful factors whose impact on operating results in occupational diseases. Both mentioned factors are present in the miner profession.

In connection with the release of two types of hazards on human body, we distinguish between two types of risk, it is - extra risk and the risk of a delayed result.

Extra risk - is the effect on body occupational hazards, the effects of which leads to all kinds of injuries. Extra risk, of course, presents in the profession of miner. However, it is not the defining moment of risk in this profession. The possibility of a collapse of the roof, blasting and drilling produce emergency situations, where workers have to act on the environment, this is the urgency of the risk, which can be equated the profession of miners to fire fighters and military occupations.

The risk of a delayed result - health care industry aimed at enhancing life expectancy, quality of life, diagnostic and treatment options, as well as the efficiency and cost effectiveness of the healthcare system. "(Laal, M., 2012)" The kind of risk, which as a result of effects on body of harmful factors (chemical, thermal, electrical, lighting, etc.), changes in the health and well-being, emerging after some time. Impact of harmful factors (vibration, noise, dust, coal-breed, mine microclimate) on health of worker for a long time leads to the accumulation of occupational diseases. It is a daily risk for many years.

After selected these two types of risk, we conducted a study of motivation career choices related to health risks. The study involved two representatives of professions related to risk. The study involved two representatives of professions related to risk – 52 miners and 47 fire-rescue workers.

This article presents some of the results our research regarding the subjective assessment of occupational risk and results obtained using psycho- biographical techniques. Due to the fact that we are interested in particular the risk of a delayed result, which is reflected after a certain time on health and well-being of workers, we have included in our plan of study the self-evaluation of their health by workers. We carried out semi-structured biographical interview with each subject in order to identify the subjective assessment of occupational risk and the workers' attitudes to their health.

We turned to the study of the subjective aspect of the problem, since the objective side does not provide enough motivation meaningful explanation of risk. In our opinion, the risk characteristics of motivation work can be completed in research on "subjective content, i.e. the importance of objective for the subject, subject' attitude to this content"/4/.

In the previous phase of our work, we compared the relationship to work in the two professions with different types of risk, with the result that revealed a different attitude to the work. Between groups of miners and firefighters were found differences in the hazard assessment of their work. Fire-rescue workers say their job is not dangerous. However, miners say their professional risk is highly enough.

For a detailed analysis of risk assessment from a subjective point of view, was conducted a content analysis of texts of interviews with the subjects. We set a goal to identify the awareness of risk at work. When subjects believe that their work involves a risk, how they think the risk justified or unjustified.

After the pre-processing of materials conversations we have identified the following typical statements that express risk assessment at work:

1. conscious evaluation of the presence or absence of risk in the work;
2. personally insignificant risk (objective existence of occupational risk is known, but the subject does not feel a sense of danger);
3. the risk is justified (a measure of occupational risk and satisfaction with their work correspond);
4. the risk is unjustified.

Dedicated risk attitude as the occurrence in the texts were recorded and counted. The results are shown in table 1 (the data results are presented in terms of percentage).

Table 1. Comparative table of the subjective assessment of risk in the work of miners and fire-rescue (based on biographical interviews), (%)

Groups	conscious evaluation of the presence or absence of risk in the work		personally insignificant risk	justified risk	unjustified risk
	there is a risk	no risk			
Miners	51,29	1,03	2,07	12,43	33,67
Firefighters	23,72	45,76	6,77	15,25	8,47

According to data presented in table number 1, 51.29% of miners and 23.72% of firefighters aware of existence risk in their work. This high rate of miners is probably a consequence of the existing double risk in their work. Veteran firefighters, who had to act in emergency, consider their profession more dangerous but then they say that such cases in their practice was not so much.

1.03% of miners and 45.76% firefighters consciously consider their work nonhazardous. Amazing paradox: the profession of firefighters, the public opinion is considered one of the most dangerous, according to a subjective assessment of risk themselves fire was not so dangerous. According to many fire fighters in their work there is no daily-risk as in the work of miners. Risk of fire in the profession can be avoided if we work intelligently, respecting safety. The results of previous analysis of attitudes to work confirm this risk assessment for professional firefighters: risk was estimated much higher by the miners than the firefighters, which was supported by the significant difference by Student' criteria ($t = 3,324$ at $t=2,631$ ($p<0.01$) for $n=99$).

Risk is not personally significant for 2.07% of miners and 6.77% of firefighters. This assessment, first of all, has to do with the workers and firefighters, who joined recently. In particular, young firefighters explained this opinion by the fact that they have not had to go to big fire, and be able to assess occupational risk. Case of the miners this figure is related to the workers for who is more important to have a regular job, which would give the opportunity to have a small, but steady income.

12.43% of miners and 15.25% of firefighters consider their work as having the justified risk. Despite the fact that the calculated risks in the two groups is estimated at about the same, the content analysis revealed a meaningful difference in the explanation of the justification of risk. This indicator is related mainly to young miners, as working, they have the opportunity to receive higher education. For this reason, they believe that for the sake of the future can patient, to later be able to transfer to a more secure job. Among older miners justified risks are those for whom peace and prosperity in family is more important than health and safety. Unlike the miners, firefighters, who consider professional risk justified, motivated attitude to risk is the fact that they work in a fairly calm conditions, the work provides a steady income, higher flexibility of shift work allows them to focus more on the family. Besides, there is opportunity for career growth, and preferential retirement age. Miners work in heavy gas pollution and lack of fresh air, now grace the retirement age does not apply to their profession, the health risk is not considered just as a high level of accidents in mines pushes this type of risk in background.

33.67% of miners believe that their work has an unreasonable risk. For them, the risk is not justified, because the work does not provide sufficient income, a sense of usefulness. Sense of usefulness is supported only family, which they are responsible. Subjectively unjustified professional risk attached to their stay in this job for the external necessary - forcing. 8.47% of firefighters believe that their work has an unjustified risk: in their view, the risk to any degree is better to avoid. Unjustified risk assessment fire below estimates miners, as their work is only an extra risk, but it is subjectively evaluated low

The obtained data for risk assessment in professional activities have been checked for accuracy by differences of Student. As a result, we found differences in the conscious evaluation of risk in work: $t = 10,218$ at $t = 2,631$ ($p < 0.01$) for $n = 99$. Miners estimate the risk of their profession much higher than fire-rescue. In this case, the miners' appreciation motivated double risk in their work, emergency risk and delayed results. From a conversation with one of the miners: *"The choice of work was unconscious. Now I realize the risks faced by yourself, the risk of injury and*

health risks. Dust, pollution of air and a lot of other things. I do not know, take into account double damage of work, I did not recognize ". Fire-rescue workers, in which there is an extra risk, consider that the risk of their work can be overcome, if you observe the safety precautions.

Significant difference is in the assessment of occupational unjustified risk ($t = 6,560$ at $t = 2,631$ ($p < 0.01$) for $n = 99$). Miners risk is assessed as unjustified, loss of health at work cannot be measured by any material benefits or other achievements.

We concluded that the miner profession is much more dangerous than firefighters, as evidenced by the awareness of risk injury and health risks in the profession miner. Risk miner more than firefighters realized unjustified, but against social risks - the risk of unemployment, the presence of associated risk, understood as a value, as the availability of work gives a sense of usefulness in family and raises self-esteem.

Work of firefighters is dangerous in the eyes of public opinion, but on the subjective assessment of risk profession is not dangerous. There are risks of fire is low subjectively evaluate and consider it justified. Thus, the subjective assessment of occupational risk is contrary to stereo types of high risk profession firefighters.

Our analysis was to identify the relationship of miners to their health, as their work is not only connected with the extra risk, but also with the risk of a delayed result. Risk of delayed result impact of the aggressive work of environment and hazards to health workers noticed only after some time. Our goal was to find out, as in this case the workers rate their health, whether it is of value to experienced miners and miners, who began his work experience recently. We identified two groups of miners on length of service, as the accumulation of occupational diseases is parallel to the accumulation of work experience.

As a result of pre-processing text of biographical interviews identified the following types of statements, which express attitude and evaluation of health workers:

1. health is a value;
2. health and wealth are equal;
3. welfare of the family is more valuable than health;
4. having a job is more valuable than health;
5. I do not think about it.

The statements on these topics as occurrence in the text were recorded and counted. The results are shown in table 2 in percentage.

Table 2. Comparative table of subjective evaluation miners
experienced more than five years and up to 5 years (based on biographical interviews), (%)

Groups	health is a value	health and wealth are equal	welfare of the family is more valuable than health	having a job is more valuable than health	I do not think about it
Miners with experience more than 5 years	9	11	33	42	5
Miners with experience up to 5 years	31,39	9,3	30,23	22,09	6,97

According to data presented in table № 2, we see that health is a value for 9% of miners with experience more than 5 years and for 31.39% of miners with experience up to 5 years. Miners with experience, for which health is a value, received compensation for the serious and harmful working conditions, are going to transfer to the light work. Young miners relating to health as a great value, going after graduating to have more safety work. For them stay in this job is temporary.

The slight discrepancy in the assessment of equivalence of health and material well-being of the family is found between the two groups of miners: 11% of miners with experience more than 5 years, and 9% of miners with experience up to 5 years. They believe that provision of peace and well-being of the family on the background of today's instability is the fact that they keep their health in the workplace.

33% of miners with experience more than 5 years believe that the welfare and peace of family is more valuable than their health. Approximately the same result was obtained in the group of young miners (30.23%). This suggests that the responsibility for family does not depend on age. This opinion of the older generation of miners is motivated by the fact that after years of service (most of them have more than 15 years of underground experience) health is lost, and the future of their children is more important. Excerpt from a conversation with one of the subjects: *"The main purpose - to put children on foot wear, shoes, so were full citizens, to learn. Though I will not eat, but I will give education to their children. That's my main goal, and for that work will be. And then it is too late to change anything. I try not to think about it"*.

Having a job is more valuable than health for 42% of miners with experience. Many of them said that the collapse of the Union and fundamental changes in the country have changed their attitude to work, their work is not valued as before, before they were proud of what they miners, but now they do not have those feelings. But they have to continue to work under difficult conditions, as late to change anything, and remain unemployed worse than risk health. Unlike the older miners young miners far below assessed the availability of work - 22.09%.

The displacement idea of the health value in two groups is about the same - 5% of miners with experience more than 5 years and 6.97% of miners with experience up to 5 years. This is probably a consequence of psychological protection.

We applied the criterion of distinction Student to these data. As a result, between groups of miners with experience more than 5 years and up to 5 years, found a significant difference in the evaluation of health as a value ($t = 3,028$ at $t = 2,669$ ($p < 0.01$) for $n = 57$). For young miners health is the most valuable, than for miners with experience. On the example of the older generation of miners they see a real threat to their health. For miners with experience more than 5 years subjectively lost health is not of great value.

The work itself is the most value for the miners with experience, as evidenced by significant differences ($t = 3,4$ for $t = 2,669$ ($p < 0.01$) for $n = 57$). Such an attitude to work as a value, we see not only in the group of the miners with experience. For people over 40, but have not yet reached retirement age, finding a job is difficult enough. For this reason, the very existence of work is a paramount value. For many young miners work associated with the risk is not great value, because they believe that they would be able to find a job without of the industrial organization. Their future, most young people do not associate with underground experience.

Thus, subjective assessments of miner profession are one of the most dangerous. Unlike the miners, rescue firefighters, whose work is considered dangerous on a broad public opinion, their work from a subjective point of view is not considered as dangerous. Miners realized double risk of their profession - extra risk and risk of delayed results. Miners consider the professional risk unreasonable, but against the social risk - the risk of unemployment, the presence of work, related with risk, is understood as the value. It should be noted that we observed subjective assessments of health are the result of relations characteristic of social area. Not long ago, the profession of miners was held in high esteem and had certain benefits, risks commensurate wages, which affect the assessment of subjective risk. Changes in the country touching the conditions of work and pay are dramatically changed the way the miners attitude to work and, therefore, health assessment. If a miner before risking their health and lives, he knew that his risk is assessed accordingly.

Health is the most value for the miners with experience up to 5 years, for this reason many of them consider their stay in this job temporary, because in the future it will give them the opportunity to move to a more secure job. For miners with experience more than 5 years to be unemployed is riskier than the work associated with the risk. In addition, over years of underground work subjectively lost health is not the primary value.

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